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Dynamically Displaying Current Status of Tasks

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1 **RELATED APPLICATIONS**

2 A claim of priority is made to U.S. Provisional Application No. 60/240,685,
3 filed October 16, 2000, entitled "Method for Dynamically Displaying the Current
4 Status of Tasks".

5 **TECHNICAL FIELD**

6 The present invention is directed to graphical user interfaces and more
7 particularly to dynamically displaying the current status of tasks.

8 **BACKGROUND**

9 As computers become increasingly powerful and commonplace, they are
10 being used for an increasingly broad variety of tasks. For example, in addition to
11 traditional activities such as running word processing and database applications,
12 computers are increasingly becoming an integral part of users' daily lives.
13 Programs to schedule activities, generate reminders, and provide rapid
14 communication capabilities are becoming increasingly popular. Moreover,
15 computers are increasingly present during virtually all of a person's daily
16 activities. For example, hand-held computer organizers (e.g., PDAs) are
17 increasingly common, and communication devices such as portable phones are
18 increasingly incorporating computer capabilities. More recently, the field of
19 wearable computers (e.g., with eyeglass displays) has begun to expand, creating a
20 further presence of computers in people's daily lives.

21 Computers often progress through a particular series of steps when
22 allowing a user to accomplish a particular task. For example, if a user desires to
23 enter a new name and address to an electronic address book, the computer

1 progresses through a series of steps prompting the user to enter the desired
2 information (e.g., name, street address, city, state, zip code, phone number, etc.).
3 On computers with large displays (e.g., typical desktop computers), sufficient area
4 exists on the display to provide an informative and useable user interface (UI) that
5 allows the user to enter the necessary data for the series of steps. However,
6 problems exist when attempting to guide the user through the particular series of
7 steps on smaller displays. Without the large display area, there is frequently
8 insufficient room to provide the prompts in the same informative and useable
9 manner.

10 Additionally, the nature of many new computing devices with small
11 displays (e.g., PDAs and wearable computers) is that the computing devices are
12 transported with the user. However, traditional computer programs are not
13 typically designed to efficiently present information to users in a wide variety of
14 environments. For example, most computer programs are designed with a
15 prototypical user being seated at a stationary computer with a large display device,
16 and with the user devoting full attention to the display. In that environment, the
17 computer program can be designed with the assumption that the user's attention is
18 predominately on the display device. However, many new computing devices
19 with small displays can be used when the user's attention is more likely to be
20 diverted to some other task (e.g., driving, using machinery, walking, etc.). Many
21 traditional computer programs, designed with large display devices in mind,
22 frequently do not allow the user to quickly and easily reorient him-or her-self to
23 the task being carried out by the computer. For example, if the user is performing
24 a task by following a series of steps on a wearable computer, looks away from the
25 display to focus his or her attention on crossing a busy intersection, and then

1 returns to the task, it would be desirable for the user to be able to quickly and
2 easily reorient him- or her-self to the task (in other words, readily know what steps
3 he or she has accomplished so far and what the next step to be performed is).

4 Accordingly, there is a need for new techniques to display the current status
5 of tasks to a user.

6

7 SUMMARY

8 Dynamically displaying current status of tasks is described herein.

9 According to one aspect, a list of items corresponding to tasks that are to be
10 performed are displayed. The tasks may be performed by a user (e.g., data entered
11 by the user, words spoken by the user, actions taken by the user, and so forth) or
12 alternatively by a computer (e.g., the steps followed in carrying out a programmed
13 task). At least a portion of the list is displayed at any given time along with an
14 indication of which task is the next task to be performed. As the user progresses
15 through the set of tasks, the current status of his or her progression through the
16 corresponding items on the list is dynamically updated so as to readily inform the
17 user (or someone else) as to what the current task is that needs to be performed, as
18 well as what tasks have already been performed and/or what tasks remain to be
19 performed.

20 According to another aspect, only a subset of the list of items is displayed
21 at any given time. The list is scrolled through as the tasks are performed so that
22 different items are displayed as part of the subset as tasks are performed.

23 According to another aspect, multiple lists of tasks to be performed by
24 multiple individuals (or computing devices) are displayed on a display of the user.
25 As the multiple individuals (or computing devices) finish the tasks in their

1 respective lists, an indication of such completion is forwarded to the user's
2 computer, which updates the display to indicate the next task in the list to be
3 displayed. The user is thus able to monitor the progress of the multiple individuals
4 (or computing devices) in carrying out their respective tasks.

5

6 **BRIEF DESCRIPTION OF THE DRAWINGS**

7 The present invention is illustrated by way of example and not limitation in
8 the figures of the accompanying drawings. The same numbers are used
9 throughout the figures to reference like components and/or features.

10 Fig. 1 illustrates an exemplary computing device such as may be used in
11 accordance with certain embodiments of the invention.

12 Fig. 2 illustrates an exemplary user interface display in accordance with
13 certain embodiments of the invention.

14 Fig. 3 illustrates an exemplary display of an item list and current location
15 marker such as may be used in accordance with certain embodiments of the
16 invention.

17 Figs. 4A and 4B illustrates different ways in which the prompt in a
18 sequence can be changed.

19 Fig. 5 is a flowchart illustrating an exemplary process for displaying the
20 current status of tasks in accordance with certain embodiments of the invention.

21 Figs. 6 and 7 illustrate alternative displays of the item list and current
22 location identifiers with reference to a sequence of tasks to be completed in order
23 to record a new inspection (e.g., a building inspection).

24 Fig. 8 illustrates an exemplary distributed environment in which the status
25 of tasks being performed by multiple users can be monitored.

1 Fig. 9 illustrates an exemplary group of lists that may be displayed for the
2 distributed environment of Fig. 8.

3

4 **DETAILED DESCRIPTION**

5 Dynamically displaying the current status of tasks is described herein. A
6 list of items or prompts that is to be traversed by a user in a particular order is
7 displayed to the user (e.g., a set of tasks the user is to perform in a particular
8 sequence as part of his or her job, a set of words to be spoken, a list of questions or
9 fields to be answered, and so forth). At least a portion of the list is displayed at
10 any given time along with an indication of which item in the list is the next item
11 that the user needs to handle (e.g., the next task to perform, the next word to
12 speak, the next question to answer, and so forth). As the user progresses through
13 the list of tasks, the current status of his or her progression through the prompts on
14 the list is dynamically updated so as to readily inform the user as to what the
15 current task is that needs to be performed, as well as what tasks have already been
16 performed and/or what tasks remain to be performed.

17 Fig. 1 illustrates an exemplary computing device 100 such as may be used
18 in accordance with certain embodiments of the invention. Computing device 100
19 represents a wide variety of computing devices, such as wearable computers,
20 personal digital assistants (PDAs), handheld or pocket computers, telephones (e.g.,
21 cell phones), laptop computers, gaming consoles or portable gaming devices,
22 desktop computers, Internet appliances, etc. Although the dynamic displaying of
23 current status of tasks described herein is particularly useful if computing device
24 100 has a small display, any size display may be used with the invention.

1 Computing device 100 includes a central processing unit (CPU) 102,
2 memory 104, a storage device 106, one or more input controllers 108, and one or
3 more output controllers 110 (alternatively, a single controller may be used for both
4 input and output) coupled together via a bus 112. Bus 112 represents one or more
5 conventional computer buses, including a processor bus, system bus, accelerated
6 graphics port (AGP), universal serial bus (USB), peripheral component
7 interconnect bus (PCI), etc.

8 Memory 104 may be implemented using volatile and/or non-volatile
9 memory, such as random access memory (RAM), read only memory (ROM),
10 Flash memory, electronically erasable programmable read only memory
11 (EEPROM), disk, and so forth. Storage device 106 is typically implemented using
12 non-volatile "permanent" memory, such as ROM, EEPROM, magnetic or optical
13 diskette, memory cards, and the like.

14 Input controller(s) 108 are coupled to receive inputs from one or more input
15 devices 114. Input devices 114 include any of a variety of conventional input
16 devices, such as a microphone, voice recognition devices, traditional qwerty
17 keyboards, chording keyboards, half qwerty keyboards, dual forearm keyboards,
18 chest mounted keyboards, handwriting recognition and digital ink devices, a
19 mouse, a track pad, a digital stylus, a finger or glove device to capture user
20 movement, pupil tracking devices, a gyropoint, a trackball, a voice grid device,
21 digital cameras (still and motion), and so forth.

22 Output controller(s) 110 are coupled to output data to one or more output
23 devices 116. Output devices 116 include any of a variety of conventional output
24 devices, such as a display device (e.g., a hand-held flat panel display, an eyeglass-
25 mounted display that allows the user to view the real world surroundings while

1 simultaneously overlaying or otherwise presenting information to the user in an
2 unobtrusive manner), a speaker, an olfactory output device, tactile output devices,
3 and so forth.

4 One or more application programs 118 are stored in memory 104 and
5 executed by CPU 102. When executed, application programs 118 generate data
6 that may be output to the user via one or more of the output devices 116 and also
7 receive data that may be input by the user via one or more of the input devices
8 114. For discussion purposes, one particular application program is illustrated
9 with a user interface (UI) component 120 that is designed to present information to
10 the user including dynamically displaying the current status of tasks as discussed
11 in more detail below.

12 Although discussed herein primarily with reference to software components
13 and modules, the invention may be implemented in hardware or a combination of
14 hardware, software, and/or firmware. For example, one or more application
15 specific integrated circuits (ASICs) could be designed or programmed to carry out
16 the invention.

17 Fig. 2 illustrates an exemplary user interface display in accordance with
18 certain embodiments of the invention. User interface display 150 can be, for
19 example, the display generated by user interface 120 of Fig. 1. UI display 150
20 includes an item or prompt list portion 152, a user choices portion 154, and an
21 applet window portion 156. Additional labels or prompts 158 may also be
22 included (e.g., a title for the task being handled, the current time, the amount of
23 time left to finish the task, etc.). List portion 152 displays a list that prompts the
24 user of tasks that are to be handled by the user in a particular order. An indication
25 is also made to the user within list portion 152 of where the user currently is in

1 that list (that is, what the next item or task is that needs to be handled by the user),
2 and also identifies items or tasks (if any) that have already been handled by the
3 user as well as future items or tasks (if any) that need to be handled by the user.
4 The manner in which an item or task is handled by the user is dependent on the
5 nature of the list, as discussed in more detail below.

6 User choices portion 154 displays the options for the user to select from
7 based on the next item or task in the list that needs to be handled by the user. For
8 example, assume that the list in portion 152 is a list prompting the user regarding
9 what information needs to be gathered in order for the user to set up a meeting
10 with a potential customer. The list of prompts in list portion 152 could be a list of
11 tasks the user must perform – that is, a list of information that needs to be
12 collected (e.g., the customer's name, the location of the meeting, the time of the
13 meeting, and so forth). If we further assume that the current task that needs to be
14 handled by the user is entry of the location of the meeting, user choices portion
15 154 could display the various permissible inputs for the location of the meeting
16 (e.g., at the user's main office, at a remote office, at the customer's facility, and so
17 forth).

18 By way of another example, the item list may be a list of prompts for the
19 information to be verbally input by the user in each step, with user choices portion
20 154 displaying a list of which words can be spoken in each step.

21 Applet window portion 156 displays additional information clarifying or
22 amplifying the choices in user choices portion 154 (or the current item or task in
23 item list portion 152). Following the previous example, if the current task that
24 needs to be handled by the user is entry of the location of the meeting, applet
25 window portion 156 could display additional descriptive information for one or

1 more of the permissible inputs for the location of the meeting (e.g., a street
2 address, a distance from the user's home, a map flagging the locations of the
3 various meeting locations, and so forth).

4 The list displayed in list portion 152 is a list of items that is to be traversed
5 by a user in a particular order. This can be a list of task prompts regarding tasks
6 that the user is to perform, a list of tasks prompts regarding tasks to be performed
7 by another user or computer, and so forth. Any of a wide variety of lists can be
8 displayed, such as a set of tasks the user is to perform in a particular sequence as
9 part of his or her job (this can be used, for example, to assist in training users to do
10 their jobs), a set of tasks the user is to perform in a particular sequence in order to
11 assemble or install a product he or she has purchased, a set of words to be spoken
12 (e.g., queues as to what voice inputs the user is to make in order to carry out a
13 task), a list of questions or fields to be answered, and so forth. Alternatively, the
14 list of items may be a list of tasks or steps to be performed by a computer or
15 computer program. Such a list can be used, for example, by a user to track the
16 process of the computer or program in carrying out the particular sequence of
17 steps. Additionally, depending on the nature of the sequence of tasks being
18 performed, multiple lists of items may be displayed (e.g., a multi-tiered item list).

19 Situations can arise in which the list of items or prompts is too large to be
20 displayed in its entirety. In such situations, only a portion of the list is displayed
21 (e.g., centered on the item or prompt for the next task to be performed). This
22 subset of the steps to be performed is then scrolled as tasks are completed,
23 resulting in a dynamic list display that changes when a task is completed.

24 By displaying the list of prompts (or at least a portion thereof), the user is
25 able to readily identify the status of the set of tasks being performed (in other

1 words, the user is also able to obtain a feel for where he or she is (or where the
2 user or computer being monitored is) in progressing through the sequence of
3 tasks). The user is able to quickly identify one or more previous tasks (if any) in
4 the sequence, as well as one or more future tasks (if any) in the sequence. Such
5 information is particularly helpful in reorienting the user to the sequence of tasks
6 if his or her attention has been diverted away from the sequence. For example, the
7 user's attention may be diverted away from the sequence to answer questions from
8 another employee. After answering the question, the user can look back at display
9 150 and quickly reorient him- or her-self into the sequence of tasks being
10 performed.

11 Item lists may be a set of predetermined items, such as a particular set of
12 steps to be followed to assemble a machine or a set of words to be uttered to carry
13 out a task for a speech-recognizing computer. Alternatively, item lists may be
14 dynamic, changing based on the user's current location, current activity, past
15 behavior, etc. For example, computer 100 of Fig. 1 may detect where the user is
16 currently located (e.g., in his or her office, in the assembly plant, which assembly
17 plant, etc.), and provide the appropriate instructions to perform a particular task
18 based on that current location. Additional information regarding detecting the
19 user's current context (e.g., current location, current activity, etc.) can be found in
20 a co-pending U.S. Patent Application Serial No. 09/216,193, entitled "Method and
21 System For Controlling Presentation of Information To a User Based On The
22 User's Condition", which was filed December 18, 1998, and is commonly
23 assigned to Tangis Corporation. This application is hereby incorporated by
24 reference.

1 Fig. 3 illustrates an exemplary display of an item list and current location
2 marker such as may be used in accordance with certain embodiments of the
3 invention. Assume that the sequence of items on the list is a set of prompts
4 regarding information that needs to be supplied by the user in order to schedule a
5 meeting. In the illustrated example, this list includes the following information:
6 who the meeting is with (who), the date and time for the meeting (when), the
7 duration of the meeting (how long), the location of the meeting (where), an
8 indication of any materials to bring to the material (bring), and an indication of
9 anyone else that should be notified of the meeting (cc).

10 Fig. 3 illustrates an example item list displayed in list portion 152 of Fig. 2.
11 Initially, the item list 170 is displayed, including the following prompts: "who?",
12 "when?", "how long?", "where?", and "bring?". The prompts in list 170 provide a
13 quick identification to the user of what information he or she needs to input for
14 each task in the sequence of tasks for scheduling a meeting. Due to the limited
15 display area, list 170 does not include the prompts for each step in the sequence,
16 but rather scrolls through the prompts as discussed in more detail below. A
17 current location marker 172 is also illustrated in Fig. 3 to identify to the user what
18 the current step is in the sequence. Assuming the meeting scheduling process has
19 just begun, the first step in the sequence is to identify who the meeting is with
20 (who), which is identified by current location marker 172 being situated above the
21 prompt "who?". In the illustrated example, location marker 172 is a circle or ball.
22 Alternatively, other types of presentation changes may be made to alter the
23 appearance of a prompt (or area surrounding a prompt) in order to distinguish the
24 current step from other steps in the sequence. For example, different shapes other
25 than a circle or ball may be used for a location marker, the text for the prompt may

1 be altered (e.g., a different color, a different font, a different size, a different
2 position on screen (e.g., slightly higher or lower than other prompts in the list),
3 and so forth), the display around the prompt may be altered (e.g., the prompt may
4 be inverted so that it appears white on a black background rather than the more
5 traditional black on a white background, the prompt may be highlighted, the
6 prompt may be encircled by a border, and so forth), etc. Those skilled in the art
7 can easily determine a variety of alternate methods for marking the current step.

8 One additional presentation change that can be made to distinguish the
9 current step from other steps in the sequence is to change the prompt itself. The
10 prompt could be replaced with another prompt, or another prompt could be
11 superimposed on the prompt for the current step. For example, the user may have
12 a set of individuals that he or she typically meets with, and these may be
13 superimposed on the "who?" prompt when it is the current step. Figs. 4A – 4B
14 illustrates different ways in which the prompt in a sequence can be changed. Fig.
15 4A illustrates an example item list with the prompt for the current step in the
16 sequence being superimposed with various input options. A list 190 is illustrated
17 and the current step is to input who the meeting is to be with (the "who?" prompt).
18 As illustrated, a set of common people that the user schedules meetings with (Jane,
19 David, Lisa, and Richard) are superimposed on the "who?" prompt. The
20 appearance of the underlying prompt "who?" may be changed (e.g., shadowed out,
21 different color, etc.) in order for overlying input options to be more easily viewed.
22 It is to be appreciated that the exact location of the superimposed set of input
23 options can vary (e.g., the characters of one or more input options may overlap the
24 prompt, or be separated from the prompt).

1 Fig. 4B illustrates an example item list with the prompt for the current step
2 in the sequence being replaced by the set of input options. A list 192 is illustrated
3 and the current step is to input who the meeting is to be with (the "who?" prompt).
4 However, as illustrated, the "who?" prompt is replaced with a set of common
5 people that the user schedules meetings with (Jane, David, Lisa, and Richard).

6 The user is thus given an indication of both the current step in the sequence
7 as well as common responses to that step. The type of information that is
8 superimposed on or replaces the prompt can vary based on the current step. For
9 example, when the "when?" prompt is the current step it may have superimposed
10 thereon the times that the user is available for the current day (or current week,
11 and so forth).

12 Returning to Fig. 3, once the user enters the information identifying who
13 the meeting is with (assume for purposes of this example the meeting is with Bob
14 Smith), list 170 is changed to list 174 in which the prompt "who?" is replaced with
15 the name "Bob Smith" and the current location marker 172 is changed to indicate
16 the next prompt ("when?") is the current task that needs to be handled by the user.
17 Assuming the user inputs that the meeting is to occur at 10am on October 31, list
18 174 is changed to list 176 in which the prompt "when?" is replaced with the date
19 and time of the meeting, and the current location marker 172 is changed to
20 indicate the next prompt ("how long?") is the current task that needs to be handled
21 by the user. Thus, as can be seen from lists 172, 174, and 176, the current location
22 marker 172 "bounces" along the list from item to item, making the user readily
23 aware of what the current task is that he or she should be performing (that is,
24 which data he or she should be inputting in the present example).

1 Once the user inputs the duration of the meeting, list 176 is changed to list
2 178. Given the limited display area, the user interface now scrolls the list so that
3 the leftmost item is no longer shown but a new item is added at the right. Thus,
4 the identification of "Bob Smith" is no longer shown, but a prompt for who else
5 should be notified of the meeting ("cc?") is now shown. Once the user enters the
6 location for the meeting ("home office"), list 178 is changed to list 180 and current
7 location marker 172 is changed to indicate the next prompt ("bring?") is the
8 current task that needs to be handled by the user. Thus, as can be seen with lists
9 176, 178, and 180, current location marker 172 may not be moved in response to
10 an input but the list may be scrolled.

11 Thus, as can be seen in Fig. 3, the item list provides a series of prompts
12 identifying what tasks (if any) in the sequence have already been performed and
13 what tasks (if any) remain to be performed. For those tasks that have already been
14 performed, an indication is made in the list as to what action was taken by the user
15 for those tasks (e.g., what information was entered by the user in the illustrated
16 example). Thus, the user can readily orient him- or her-self to the sequence of
17 steps, even if his or her attention is diverted from the display for a period of time.
18 Alternatively, the prompts in the list need not be changed when the user enters the
19 data (e.g., "who?" need not be replaced by "Bob Smith"). The data input by the
20 user can alternatively be displayed elsewhere (e.g., in applet window portion 156).

21 One advantage of the item lists described herein is that the lists present the
22 multiple steps or items in a concise manner – these steps or items can also be
23 referred to as idioms. When these idioms are presented together in a sequence, the
24 provide more information to the user than when presented in independent form.
25 For example, the idiom "bring?" by itself does not present as much information to

1 the user as the entire sequence of idioms "who?", "when?", "how long?",
2 "where?", and "bring?".

3 The use of item lists as described herein also allows an individual to
4 "zoom" in on (and thus gain more information about) a particular task. For
5 example, with reference to Fig. 3, the user is able to select and zoom in on the
6 "where?" prompt and have additional information about that task displayed (e.g.,
7 the possible locations for the meeting). The user is able to "backtrack" through the
8 list (e.g., by moving a cursor to the desired item and selecting it, or using a back
9 arrow key or icon, or changing the current location marker (e.g., dragging and
10 dropping the location marker to the desired item), etc.) and see this additional
11 information for tasks already completed. Alternatively, the "backtracking" may be
12 for navigational rather than informational purposes. Moving back through the list
13 (whether by manipulation of the location marker or in some other manner) may
14 also be used to accomplish other types of operations, such as defining a macro or
15 annotation.

16 Additionally, by displaying the prompts for future items, the speed of
17 handling of the sequence of the items by the user can potentially be increased. For
18 example, the user can see the prompt for the next one or more items in the list and
19 begin thinking about how he or she is going to handle that particular item even
20 before the computing device is finished processing the input for the item he or she
21 just handled.

22 According to another embodiment, multiple location markers are displayed
23 along with the item list – one marker identifying the current item to be handled by
24 the user and another marker identifying the current item being processed by the
25 computing device. Situations can arise where the user can input data quicker than

1 it can be processed by the computing device. For example, the user may be able to
2 talk at a faster rate than the computing device is able to analyze the speech.

3 The use of two such markers can allow the user to identify if the computing
4 device is hung up on or having difficulty processing a particular input (e.g.,
5 identify a particular word spoken by the user, misrecognition of the input,
6 improper parsing, etc.), the user can identify this situation and go back to the task
7 the computing device is having difficulty processing and re-enter the speech.

8 Fig. 5 is a flowchart illustrating an exemplary process for displaying the
9 current status of tasks in accordance with certain embodiments of the invention.
10 The process of Fig. 5 is carried out by the user interface of a computing device
11 (e.g., interface 120 of Fig. 1), and may be performed in software. Although Fig. 5
12 is discussed with reference to a location marker, it is to be appreciated that any of
13 the presentation changes discussed above can be used to identify items in the list.

14 Initially, an item list is displayed (act 200), which is a sequence of items or
15 prompts for the user to follow. A current location marker is also displayed to
16 identify the first item in the list (act 202), and input corresponding to the first item
17 in the list is received (act 204). The nature of this input can vary depending on the
18 sequence of tasks itself (e.g., it may be data input by a user, an indication from
19 another computer program that the task has been accomplished, etc.). A check is
20 then made as to whether the end of the list has been reached (act 206). If the end of
21 the list has been reached then the process stops (act 208), waiting for the next
22 sequence of tasks to begin or for the user to backtrack to a previously completed
23 task.

24 However, if the end of the list has not been reached, then a check is made
25 as to whether scrolling of the list is needed (act 210). Whether scrolling of the list

1 is needed can be based on a variety of different factors. For example, the user
2 interface may attempt to make sure that there are always at least a threshold
3 number of prompts before and/or after the current location marker, the user
4 interface may attempt to make sure that the current task remains as close to the
5 center of the item list as is possible but that no portions of the item list be left
6 empty, etc. These factors can optionally be user-configurable preferences,
7 allowing the user to adjust the display to his or her particular likes and/or dislikes
8 (e.g., the user may prefer to see more future tasks than previous tasks).

9 If scrolling is needed, then the item list is scrolled by one item (or
10 alternatively more items) in the appropriate direction (act 212). The amount that
11 the item list is scrolled can vary (e.g., based on the sizes of the different items in
12 the list). The appropriate direction for scrolling can vary based on the activity
13 being performed by the user and the layout of the list (e.g., in the example of Fig.
14 3, the scrolling is from right to left when progressing forward through the list, and
15 left to right when backtracking through the list). Regardless of whether the
16 ordered item list is scrolled, after act 210 or 212 the current location marker is
17 moved as necessary to identify the next item in the list that is to be handled by the
18 user (act 214). In some situations, movement of the current location marker may
19 not be necessary due to the scrolling performed (e.g., as illustrated with reference
20 to lists 176 and 178 in Fig. 3). At some point after the current location marker is
21 moved (if necessary), user input is received corresponding to the identified next
22 item in the list (act 216). The process then returns to determine whether the end of
23 the list has been reached (act 206).

24 The item list and current location identifier or marker can be displayed in a
25 wide variety of different manners. Figs. 6 and 7 illustrate alternative displays of

1 the item list and current location identifiers with reference to a sequence of tasks
2 to be completed in order to record a new inspection (e.g., a building inspection).
3 In the exemplary display 240 of Fig. 6, an item list portion 242 and an applet
4 window portion 244 are illustrated. The item list portion 242 includes a list of
5 tasks that are to be handled by the user, each of which is information to be entered
6 by the user. Once entered, the information is displayed in applet window portion
7 244. A current location marker 246 advances down the list in portion 242 to
8 identify the current information that the user needs to input (the customer's state in
9 the illustrated display). Additional information is displayed at the top of display
10 240, including a prompt 248 identifying a type of information being entered by the
11 user (inspection information).

12 In the exemplary display 260 of Fig. 7, a multi-tiered item list is displayed
13 including list portion 262 and list portion 264. In list portion 262, prompts for the
14 overall process of recording a new inspection are listed, including selecting a new
15 inspection option and then entering inspection information. Two current location
16 markers 266 and 268 are illustrated, each providing a visual indication of where in
17 the overall process the current user is (inspection info in the illustrated display). A
18 prompt 270 provides a further identification to the user of where he or she is in the
19 overall process. List portion 264 includes prompts for the process of entering
20 inspection information, with a current location marker 272 providing a visual
21 indication of where in the inspection information entry process the user currently
22 is (customer state in the illustrated display).

23 In addition to tracking the status of tasks being performed by a single user,
24 the dynamic displaying of the current status of tasks of the present invention can
25 further be used to track the status of tasks being performed by multiple users. In

1 this situation, information indicating the status of tasks being performed by
2 multiple users is communicated back to the computing devices of one or more
3 other users, who in turn can view the status information of multiple users on a
4 single display.

5 Fig. 8 illustrates an exemplary distributed environment in which the status
6 of tasks being performed by multiple users can be monitored. In the illustrated
7 example, multiple users Jamie, John, Max, and Carol each have a wearable
8 computer with an eyeglass display 300, 302, 304, and 306, respectively. An item
9 list is displayed on the eyeglass display for each of these users, with a current
10 location marker to identify to the respective users where they are in the task
11 sequences they are performing. Information regarding their current location is
12 also communicated to another computing device of their supervisor Jane, who is
13 also wearing an eyeglass display 308. The information communicated to Jane's
14 computer can be simply an identification of the current location (e.g., Jane's
15 computer may already be programmed with all of the tasks in the list), or
16 alternatively the entire (or at least a portion of) the item list. The information for
17 one or more of the users Jamie, John, Max, and Carol can then be displayed on
18 display 308, allowing Jane to keep track of the status of each of the users Jamie,
19 John, Max, and Carol in performing their tasks. This allows Jane, as the
20 supervisor, to see if people are proceeding through their tasks too quickly or too
21 slowly (e.g., a user may be having difficulty and need assistance), to know when
22 the individual users will be finished with their tasks, etc. If a multi-tiered item list
23 is being used, then the supervisor can also zoom in on the particular step of a user
24 and get additional information regarding where the user is stuck.

1 Fig. 9 illustrates an exemplary group of lists that may be displayed on
2 eyeglass display 308 of Fig. 8. Assume that each of the users John, Jamie, Max,
3 and Carol are each performing a machine assembly process involving the
4 following tasks: inventory the necessary parts, assemble an intake, lubricate a
5 core part of the machine, install the assembled intake, verify that the batteries are
6 fully charged, and then run a diagnostic program. The tasks in the machine
7 assembly process are illustrated in a portion 310 of display 308 in an abbreviated
8 form. Alternatively, the tasks illustrated in portion 310 may not be abbreviated, or
9 may be represented in some other manner (e.g., as icons). A separate item list is
10 displayed on display 308 for each of the users along with a corresponding current
11 location marker in the shape of a ball or circle. Thus, as illustrated in Fig. 9, the
12 viewer of display 308 can readily identify that John is at the "assemble intake"
13 step, Jamie and Max are both at the "install intake" step, and Carol is at the "verify
14 charge" step. Thus, the supervisor viewing display 308 can quickly and easily
15 determine, based on the item list and current location markers, that each of Jamie,
16 Max, and Carol is proceeding normally through the assembly process, but that
17 John is hung up on the "assemble intake" step, so the supervisor can check with
18 John to see if he is experiencing difficulties with this step.

19

20 **Conclusion**

21 Although the description above uses language that is specific to structural
22 features and/or methodological acts, it is to be understood that the invention
23 defined in the appended claims is not limited to the specific features or acts
24 described. Rather, the specific features and acts are disclosed as exemplary forms
25 of implementing the invention.